Caltrans Metric

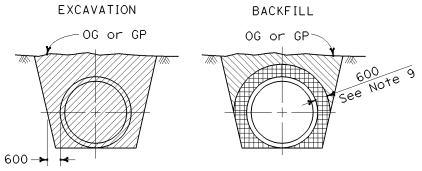
DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

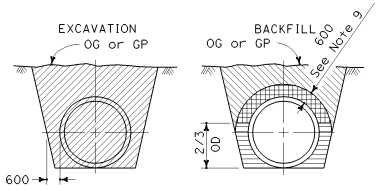
July 1, 2004
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Dallas Forester — No. C37765 — Exp. 12-31-04 — CIVIL — STATE OF CALIFORNIA

To get to the Caltrans web site, go to: http://www.dot.ca.gov



IN TRENCH



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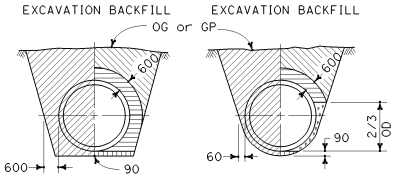
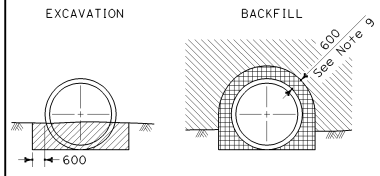
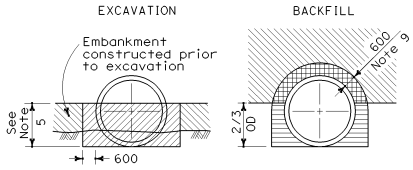


SAND BEDDING SOIL CEMENT BEDDING

IN TRENCH



IN EMBANKMENT



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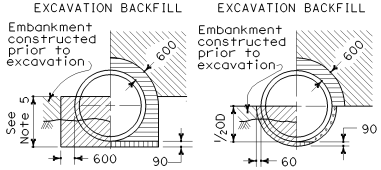


SAND BEDDING SOIL CEMENT BEDDING

A B

IN EMBANKMENT

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 1

Cover (in meters)	Minimum Class & D-Load
1.80	Class 11 50D
1.81 - 2.40	Class 111 65D
2.41 - 3.00	Class 111 Special 80D
3.01 - 3.60	Class 1V 100D
3.61 - 4.20	Class 1V Special 120D
4.21 - 5.10	Class V 140D
5.11 - 6.00	Class V Special 170D

See Notes 6 and 9

METHOD 1

MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 2

Cover (in meters)	Minimum Class & D-Load
4.80	Class 11 50D
4.81 - 6.00	Class 111 65D
6.01 - 7.50	Class 111 Special 80D
7.51 - 8.50	Class 1V 100D
8.51 - 10.60	Class 1V Special 120D
10.61 - 12.80	Class V 140D
12.81 - 15.00	Class V Special 170D

See Notes 8 and 9

METHOD 2

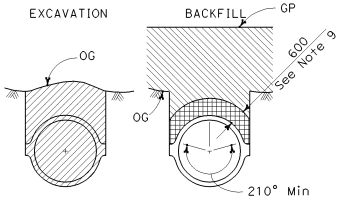
REINFORCED CONCRETE PIPE

See Notes 1, 2, 7 and 10

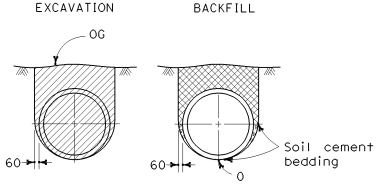
MINIMUM ALLOWABLE CLASSES OF RCP FOR METHOD 3

Cover (in meters)	Minimum Class & D-Load
7.90	Class 11 50D
7.91 - 9.70	Class 111 65D
9.71 - 11.50	Class 111 Special 80D
11.51 - 13.70	Class 1V 100D
13.71 - 17.00	Class 1V Special 120D
17.01 - 20.70	Class V 140D
20.71 - 24.00	Class V Special 170D

METHOD 3



IN TRENCH ONLY
CAST-IN-PLACE



IN TRENCH ONLY
PRECAST

See Notes 7 and 11

NON-REINFORCED CONCRETE PIPE

LEGEND

- Structure Excavation (Culvert)
- Structure Backfill (Culvert) 95% relative compaction
- Structure Backfill (Culvert) 90% relative compaction
- Loose Backfill
- Sand Bedding
- Soil Cement Bedding
- Roadway Embankment
- Original Ground

OD = Outside diameter for circular pipes and maximum vertical dimension for other shapes

ID = Inside diameter for circular pipes and minimum vertical dimension for other shapes

RCP = Reinforced concrete pipe

NOTES

1. Unless otherwise shown on the plans or specified in the special provisions, the Contractor shall have the option of selecting the class of RCP and the method of backfill to be used, provided the height of cover does not exceed the value shown for the RCP selected.
   Example:
   600 mm RCP culvert with maximum cover of 5.80 m the options are:
   a) Class V Special or stronger with Method 1.
   b) Class 111 or stronger with Method 2.
   c) Class 11 or stronger with Method 3.
   Cover is defined as the maximum vertical distance from top of pipe to finished grade within the length of any given culvert.
2. The class of RCP, method of backfill and bedding selected shall be the same throughout the length of any given culvert.
3. The ``length of any culvert'' is defined as the culvert between:
   a) Successive drainage structures (inlets, junction boxes, headwalls, etc.).
   b) A drainage structure and the inlet or outlet end of the culvert.
   c) The inlet and outlet end of the culvert when there are no intervening drainage structures.
4. Slope or shore excavation sides as necessary.
5. Embankment height prior to excavation for installation of all classes of RCP under Methods 2 and 3A shall be as follows:
   Pipe sizes 300 mm to 1050 mm I D = 750 mm
   Pipe sizes 1200 mm to 2100 mm I D = 2/3 OD
   Pipe sizes larger than 2100 mm I D = 1500 mm
6. The maximum size for all classes of RCP placed under Method 1 is 1950 mm ID.
7. Non-reinforced precast pipe sizes 900 mm or smaller may also be placed under Methods 1, 2 or 3.
8. Oval or arch shaped RCP shall be placed under Method 2 only.
9. Embankment compaction requirements govern over the 90% relative compaction backfill requirement within 750 mm of finished grade.
10. Backfill shall be placed full width of excavation except where dimensions are shown for backfill width or thickness. Dimensions shown are minimums.
11. Where the precast non-reinforced concrete pipe is used as a substitute for the cast-in-place pipe, both the wall thickness and the concrete strength shall be at least as great as that specified for the cast-in-place pipe. The fill height allowed shall not exceed that shown for the cast-in-place pipe.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

EXCAVATION AND BACKFILL CONCRETE PIPE CULVERTS

NO SCALE

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

A62D